

August 16, 1999

MEMORANDUM

SUBJECT: ERROR IN RESIN STRIP EXPOSURE ASSESSMENT FOR  
DICHLORVOS (DDVP), PC Code 084001, DP Code D257002

FROM: David Jaquith  
Chemical Exposure Branch 2  
Health Effects Division (7509C)

TO: Kimberly Lowe  
Special Review and Reregistration Division (7508C)

THRU: Sue Hummel, Senior Scientist  
Chemical Exposure Branch II  
Health Effects Division (7509C)

On February 11, 1999 the Agency received a letter via facsimile AMVAC (1) indicating that there was a mathematical error in the exposure calculations for resin strips containing DDVP (2). Specifically the registrant found that a calculation of the area under the concentration curve for 15 homes divided by the 120 day life of these products yielded an estimated time weighted average concentration greater than the concentrations measured during the study used for their derivation. The registrant is correct and there was an error in the spreadsheets used for these calculations. The error has been isolated and a corrected series of values included in the revised risk assessment (3). The corrected concentration values are presented in Table 1. The resulting exposures and Margins of Exposure using a NOAEL of 0.05 µg/kg/day are presented in Tables 2 and 3 for acute and chronic exposures/MOEs, respectively.

**Table 1. Air Concentrations of Dichlorvos (DDVP) in Fifteen Homes in Which Pest Strips Were Installed.**

Home ID	Air Cond. type	Rate (ft <sup>3</sup> /strip)	Air Concentration (µg/L)						Exponential Decay Parameters		Area Under Curve AUC	Daily Conc. (µg/L) (AUC/120)
			1 Day	7 Days	14 Days	28 Days	56 Days	91 Days	value k	value C0		
1W	Window	1270	0.02	0.02	0.020	0.005 <sup>1</sup>	0.005	0.005	0.0177	0.0179	0.8892	0.0074
2C	Central	1440	0.08	0.07	0.07	0.05	0.005	0.020	0.0229	0.0749	3.0670	0.0256
3C	Central	1410	0.04	0.03	0.03	0.01	0.01	0.005	0.0223	0.0337	1.4056	0.0117
4N	None	1410	0.02	0.02	0.01	0.005	0.005	0.005	0.0156	0.0148	0.8069	0.0067
5N	None	1730	0.05	0.02	0.02	0.01	0.005	0.005	0.0232	0.0280	1.1328	0.0094
6N	None	720	0.11	0.06	0.02	0.03	0.01	0.005	0.0303	0.0653	2.0981	0.0175
7W	Window	1080	0.11	0.05	0.06	0.02	0.02	0.005	0.0300	0.0790	2.5617	0.0213
8W	Window	2130	0.02	0.02	0.02	0.01	0.005	0.005	0.0183	0.0205	0.9942	0.0083
9C	Central	6790	0.01	0.01	0.02	0.005	0.005	0.005	0.0111	0.0114	0.7583	0.0063
10C	Central	1500	0.07	0.09	0.06	0.04	0.02	0.020	0.0172	0.0751	3.8113	0.0318
11C	Central	2050	0.05	0.04	0.02	0.02	0.005	0.005	0.0267	0.0396	1.4225	0.0119
12N	None	1550	0.05	0.07	0.02	0.03	0.01	0.005	0.0268	0.0523	1.8754	0.0156
13W	Window	1230	0.07	0.08	0.04	0.04	0.02	0.005	0.0289	0.0802	2.6883	0.0224
14W	Window	1500	0.08	0.05	0.04	0.03	0.01	0.005	0.0300	0.0668	2.1645	0.0180
15N	None	1680	0.04	0.02	0.02	0.02	0.005	0.005	0.0225	0.0297	1.2271	0.0102

<sup>1</sup> The level of detection was 0.01 µg/L, a value of 0.005 was used for these samples.

**Table 2. Daily DDVP Concentrations, Chronic Exposures and MOEs of Individuals Occupying Homes in Which Resin Strips Are Installed.**

Home ID	Exposure ( $\mu\text{g}/\text{kg/day}$ )				Chronic MOE's			
	Child 1-4	Child 5-11	Adult (F)	Adult (M)	Child 1-4	Child 5-11	Adult (F)	Adult (M)
1W	0.0029	0.0020	0.0009	0.0011	17	26	54	47
2C	0.0099	0.0067	0.0032	0.0037	5	7	16	14
3C	0.0045	0.0031	0.0015	0.0017	11	16	34	29
4N	0.0026	0.0018	0.0008	0.0010	19	28	59	51
5N	0.0037	0.0025	0.0012	0.0014	14	20	42	37
6N	0.0068	0.0046	0.0022	0.0025	7	11	23	20
7W	0.0083	0.0056	0.0027	0.0031	6	9	19	16
8W	0.0032	0.0022	0.0010	0.0012	16	23	48	42
9C	0.0024	0.0017	0.0008	0.0009	20	30	63	55
10C	0.0123	0.0084	0.0040	0.0046	4	6	13	11
11C	0.0046	0.0031	0.0015	0.0017	11	16	34	29
12N	0.0060	0.0041	0.0020	0.0023	8	12	25	22
13W	0.0087	0.0059	0.0028	0.0032	6	8	18	15
14W	0.0070	0.0048	0.0023	0.0026	7	11	22	19
15N	0.0040	0.0027	0.0013	0.0015	13	19	39	34

Input Parameters: BW: Child 1-4 = 15 kg; Child 5-11 = 22 kg; Adult Female = 60 kg; Adult Male = 70 kg  
 Daily Respiratory Volume: Child 1-4 = 8700 L/day; Child 5-11 = 8700 L/day; Adult Female = 11300 L/day; Adult Male = 15200 L/day

**Table 3. DDVP Concentrations On the First Day After Installation, Acute Exposures, and MOEs of Individuals Occupying Homes in Which Resin Strips Are Installed.**

Home ID	Acute Doses ( $\mu\text{g}/\text{kg/day}$ ) <sup>1</sup>				Acute MOE's			
	Child 1-4	Child 5-11	Adult (F)	Adult (M)	Child 1-4	Child 5-11	Adult (F)	Adult (M)
1W	0.0077	0.0053	0.0025	0.0029	65	95	199	173
2C	0.0309	0.0211	0.0100	0.0116	16	24	50	43
3C	0.0155	0.0106	0.0050	0.0058	32	47	100	86
4N	0.0077	0.0053	0.0025	0.0029	65	95	199	173
5N	0.0193	0.0132	0.0063	0.0072	26	38	80	69
6N	0.0426	0.0290	0.0138	0.0159	12	17	36	31
7W	0.0426	0.0290	0.0138	0.0159	12	17	36	31
8W	0.0077	0.0053	0.0025	0.0029	65	95	199	173
9C	0.0039	0.0026	0.0013	0.0014	129	190	398	345
10C	0.0271	0.0185	0.0088	0.0101	18	27	57	49
11C	0.0193	0.0132	0.0063	0.0072	26	38	80	69
12N	0.0193	0.0132	0.0063	0.0072	26	38	80	69
13W	0.0271	0.0185	0.0088	0.0101	18	27	57	49
14W	0.0309	0.0211	0.0100	0.0116	16	24	50	43
15N	0.0155	0.0106	0.0050	0.0058	32	47	100	86

<sup>1</sup> Using measured exposures on day 1.

<sup>2</sup> Input Parameters: Body Weight: Child 1-4 = 15 kg; Child 5-11 = 22 kg; Adult Female = 60 kg; Adult Male = 70 kg  
Daily Respiratory Volume: Child 1-4 = 8700 L/day; Child 5-11 = 8700 L/day; Adult Female = 11300 L/day; Adult Male = 15200 L/day

**REFERENCES**

- 1) Letter from E.G. Wintemute (Bergson & Campbell, P.C.) to M. Mulkey (OPP) via facsimile, February 11, 1999.
- 2) Memorandum from D. Jaquith (CEB2) to C. Scheltema (RCAB) titles Revision of Exposures from Dichlorvos (DDVP) Resin Strips (D250069, PC Code 084001), dated September 30, 1998.
- 3) Memorandum from S. Hummel (CEB2) to P. Noyes (SRB/SRRD) titled "Revised Preliminary Risk Assessment for Dichlorvos, DP Barcode D252804", dated February 16, 1999.

cc: Dichlorvos (DDVP) File (084001)  
Correspondence file  
R. Kent/7509C  
S. Hummel/7509C